LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (cancelled)

2. (cancelled)

3. (currently amended) Differential phase detector for generating a tracking error signal, having an input for receiving ~~from the~~ digitized signals of ~~four~~ at least two photodetectors, ~~including~~ the differential phase detector comprising: a multiplexer ~~for~~ that time ~~multiplexing~~ multiplexes the digitized signals;~~, wherein it includes~~ a demultiplexer / interpolator, coupled to the multiplexer, ~~for synchronizing~~ that receives the time multiplexed digital signals and synchronizes the samples from the time multiplexed digitized signals; and

summing means for summing the synchronized samples of the demultiplexer/ interpolator to generate a data signal.

4. (cancelled)

5. (currently amended) Differential phase detector according to claim 3, further including means for compensating an attenuation of high signal frequencies ~~caused by the interpolation~~ of an interpolated signal generated by the demultiplexer/interpolator, the compensating means including an input for receiving the interpolated signal.

6. (currently amended) Differential phase detector according to claim 3, wherein the demultiplexer /interpolator receives a time multiplex of N signals and wherein the demultiplexer/interpolator further outputs ~~in that it generates~~ N output channels, each of the N output channels operating at a speed equal to a speed of the multiplexed signal divided by ~~at 1/D times the speed of the time multiplex, where D is~~ an integer divider of N.

7. (currently amended) Differential phase detector according to claim 6, wherein the demultiplexer /interpolator receives a ~~four-signal~~ time multiplex of four signals and ~~in that it generates~~ wherein the demultiplexer/interpolator further outputs four output channels, each of the output channels operating at half the speed of the time multiplex.

8. (cancelled)

9. (currently amended) Method for differential phase detection, including the steps of:

- digitizing ~~the~~ output signals of four photodetectors,
- time multiplexing the digitized signals,
- synchronizing ~~the~~ samples from the time multiplexed digitized signals with a demultiplexer / interpolator, and
- generating a tracking error signal from the digitized and synchronized ~~signals~~samples; and

summing the synchronized samples of the demultiplexer/interpolator to generate a data signal.

10. (currently amended) Apparatus for reading from and/or writing to optical recording media, the apparatus comprising a differential phase detector for generating a tracking error signal and having an input for receiving digitized signals of at least two photodetectors, wherein the differential phase detector further includes: a multiplexer that time multiplexes the digitized signals; a demultiplexer / interpolator, coupled to the multiplexer, that receives the time multiplexed digital signals and synchronizes the samples from the time multiplexed digitized signals; and

summing means for summing the synchronized samples of the demultiplexer/ interpolator to generate a data signal.

~~wherein it includes a differential phase detector according to claim 3~~.